Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1. (currently amended) A case-hardened gear which is made from a steel material comprising 0.45 to 1.5 wt% C and 0.3 to 1.5 wt% Cr, and optionally including 0.1 to 0.5 wt% V, said steel material containing cementite ((Fe, Cr)3C) dispersed therein, wherein an average Cr concentration in said cementite is 2.5 to 10 wt%, and

said gear having a rolling contact surface layer having a case-hardened layer being formed by induction heating from a temperature equal to or lower than the A1 temperature to a quenching temperature of 900 to 1100°C and subsequent cooling of said rolling contact surface layer, said case-hardened layer having a structure tempered at a low temperature of 100 to 300°C in which 2 to 18% by volume of the cementite containing solid-dissolved Cr therein is dispersed in a martensite parent phase, said martensite parent phase containing 0.25 to 0.8 wt% solid-dissolved carbon.

wherein the cementite dispersed in the rolling contact surface layer is substantially granulated and the cementite has an average particle diameter of 0.1 to 1.5 μm.

Claim 2. (canceled)

Claim 3. (canceled)

Claim 4. (previously presented) The case-hardened gear according to claim 1, wherein the cementite dispersed in the rolling contact surface layer has at least a portion thereof in a pearlitic structure.

Claim 5. (previously presented) The case-hardened gear according to claim 1, wherein the rolling contact surface layer contains 10 to 60% by volume retained austenite.

Claim 6. (previously presented) The case-hardened gear according to claim 1, wherein said gear is made from a steel material having substantially the same composition as that of the rolling contact surface layer, the rolling contact surface layer

being subjected to induction hardening so as to have a parent phase of a martensitic structure in which prior austenite grains are refined to a size equal to or higher than ASTM grain size No. 10.

Claim 7. (previously presented) The case-hardened gear according to claim 1, which is made from a steel material further containing (i) 0.5 to 3.0 wt% Si, 0.25 to 1.5 wt% Al, or 0.5 to 3.0 wt% (Si + Al); and (ii) one or more alloy elements selected from the group consisting of Mn, Ni, Mo, Cu, W, B and Ca, and the balance being Fe and unavoidable impurity elements.

Claim 8. (currently amended) The case-hardened gear according to claim 7, wherein the steel material ~~further~~ comprises 0.3 to 1.5 wt% Ni and 0.25 to 1.5 wt% Al.

Claim 9. (currently amended) The case-hardened gear according to claim 1, which is made from a steel material containing at least 0.05 to 0.2 wt% in total of one or more alloy elements selected from the group consisting of Ti, Zr, Nb, Ta and

Hf, and ~~one or more compounds selected from the group consisting of the~~ carbides [[,]] ~~nitrides and carbonitrides~~ of said alloy elements, said ~~compounds~~ carbides having an average particle diameter of 0.1 to 5 μm and are dispersed within the steel material, wherein the rolling contact surface layer contains 0.5 to 1.5 wt% C in said rolling contact surface layer, the rolling contact surface layer having a martensite parent phase tempered at a low temperature after quenching.

Claim 10. (currently amended) The case-hardened gear according to claim 1 which has teeth, wherein there is a relationship between a DI value in inches indicating the hardenability of a martensite phase and a ~~diametral pitch P~~ gear module M, wherein [[P]] M is a value obtained by the ~~number of the teeth~~ pitch diameter divided by the ~~pitch diameter~~ number of teeth of said gear, which satisfies the following relationship: ~~DI ≤ 0.12 × 1/2.54 P + 0.2~~ DI ≤ 0.12 × M + 0.2 , said martensite phase being previously a ferrite phase and containing 0.25 to 0.8 wt% solid-dissolved carbon.

Claim 11. (previously presented) The case-hardened gear according to claim 10, wherein said steel material further contains 0.2 to 0.5 wt% Mn, 0.5 to 2 wt% Si, 0.2 wt% or less Mo, and 0.2 wt% or less W.

Claim 12. (previously presented) The case-hardened gear according to claim 10, wherein said steel material contains 1.2 to 1.5 wt% C and 0.6 to 1.5 wt% Cr, and wherein said steel material further contains 0.2 to 0.5 wt% Mn, 0.5 to 2 wt% Si, 0.2 wt% or less Mo, and 0.2 wt% or less W.

Claim 13. (previously presented) The case-hardened gear according to claim 10, wherein a compressive residual stress of 50 kgf/mm^2 or more remains at least on the surfaces of the roots of the teeth.

Claim 14. (previously presented) The case-hardened gear according to claim 13, wherein a compressive residual stress of 50 kgf/mm^2 or more is allowed to remain on tooth profile surface layers each comprising a tooth top, a pitch circle position, a

tooth root and a tooth bottom, by a mechanical processing means which is shot peening for generating said compressive residual stress.

Claim 15. (previously presented) The case-hardened gear according to claim 13, wherein a compressive residual stress of 50 kgf/mm^2 or more is allowed to remain on surface layers at the ends of the teeth by a mechanical processing means which is shot peening for generating said compressive residual stress.

Claim 16. (canceled)

Claim 17. (previously presented) A method of producing a case-hardened gear from a steel material containing 0.45 to 1.5 wt% C and 0.3 to 1.5 wt% Cr, and optionally including 0.1 to 0.5 wt% V, the method comprising:

(a) a Cr concentration treatment step for heating the steel material at 300°C to the A1 temperature in a two phase (cementite + ferrite) region such that an average Cr concentration of cementite dispersed in the steel material is 2.5 to 10 wt%;

(b) an induction hardening treatment step for induction heating the steel material from a temperature equal to or lower than the A1 temperature to a quenching temperature of 900 to 1100°C within 10 seconds, followed by rapid cooling; and

(c) a tempering treatment step for heating the steel material to 100 to 300°C.

Claim 18. (canceled)

Claim 19. (canceled)

Claim 20. (currently amended) The method of producing a case-hardened gear according to claim 17, ~~which further comprises a preheating treatment step in which the steel material is preheated at 300°C to the A1 temperature before the induction hardening treatment step~~ [[,]] ~~and~~ wherein the speed of heating from a temperature equal to or lower than the A1 temperature to a quenching temperature of 900 to 1100°C in the induction hardening treatment step is set to 150°C/sec or more.

Claim 21. (canceled)

Claim 22. (previously presented) The method of producing a case-hardened gear according to claim 17, further comprising a mechanical treatment step in which a compressive residual stress of 50 kgf/mm^2 or more is generated by a treatment which is shot peening, in a part or the whole of the rolling contact surface layer of the gear after the induction hardening treatment step.

Claim 23. (previously presented) The case-hardened gear according to claim 1, wherein the steel material includes 0.1 to 0.5 wt% V.

Claim 24. (previously presented) The method of producing a case-hardened gear according to claim 17, wherein the steel material includes 0.1 to 0.5 wt% V.

Claim 25. (previously presented) A method of producing a case-hardened gear from a steel material containing 0.8 to 1.5 wt% C and 0.3 to 1.5 wt% Cr, and optionally including 0.1 to 0.5 wt% V, the method comprising:

(a) a Cr concentration treatment step for heating the steel material at the A1 temperature to 900°C in a two phase (cementite

+ austenite) region such that an average Cr concentration of cementite dispersed in the steel material is 2.5 to 10 wt%;

(b) an induction hardening treatment step for induction heating the steel material from a temperature equal to or lower than the A1 temperature to a quenching temperature of 900 to 1100°C within 10 seconds, followed by rapid cooling; and

(c) a tempering treatment step for heating the steel material to 100 to 300°C.

Claim 26. (previously presented) The method of producing a case-hardened gear according to claim 25, which further comprises carrying out a spheroidizing treatment step after the Cr concentration treatment step, wherein in the spheroidizing treatment step, granular cementite having an average particle diameter of 0.1 to 1.5 μm is dispersed by cooling to a temperature lower than the A1 temperature and then reheating to a temperature equal to or higher than the A1 temperature.

Claim 27. (previously presented) The method of producing a case-hardened gear according to claim 25, which further comprises

a preheating treatment step in which the steel material is preheated at 300°C to the A1 temperature before the induction hardening treatment step, and wherein the speed of heating from a temperature equal to or lower than the A1 temperature to a quenching temperature of 900 to 1100°C in the induction hardening treatment step is set to 150°C/sec or more.

Claim 28. (previously presented) The method of producing a case-hardened gear according to claim 25, further comprising a mechanical treatment step in which a compressive residual stress of 50 kgf/mm^2 or more is generated by a treatment which is shot peening, in a part or the whole of the rolling contact surface layer of the gear after the induction hardening treatment step.

Claim 29. (previously presented) The method of producing a case-hardened gear according to claim 25, wherein the steel material includes 0.1 to 0.5 wt% V.